

TOSHIBA



**TOSHIBA AMERICA INFORMATION SYSTEMS
STORAGE DEVICE DIVISION
IRVINE, CALIFORNIA**

**MK2004GAL (HDD1422)
1.8-INCH HARD DISK DRIVE
USER MANUAL**

Rev 02

11/2006

CONTENTS

Introduction.....	1
Setup	2
Using the HDD	3
Specifications	4
Drive Connectors.....	6

INTRODUCTION – MK2004GAL (HDD1422) HARD DISK DRIVE

General Features

- 1.8" sized drive
- 2 Platter
- 20 Gigabytes*
- 5mm High
- 15ms Average Seek Time
- ATA (2 - 5) Interface
- Ultra DMA 100
- 2Mbytes Buffer
- Rotational speed of 4,200rpm
- MTTF 300,000 Hours

**Toshiba defines a megabyte (MB) as 1,000,000 bytes and a gigabyte (GB) as 1,000,000,000 bytes.*

SETUP – MK2004GAL (HDD1422) HARD DISK DRIVE



Caution: Your Hard Disk Drive is a precision device and even a small drop onto any surface can cause damage. Electrostatic discharge can also damage the drive. You should ground yourself prior to handling the drive.



Figure 1. MK2004GAL Side View

Installation Notes

- Do not apply any force to the top cover, except the screw areas on top cover. Maximum force to the specified area is 2N.



important Note: *Disconnect power from your computer system before beginning installation*

USING THE HARD DISK DRIVE – MK2004GAL (HDD1422) HARD DISK DRIVE

Backing up Data Files

To avoid data loss, regularly back up the data files on the hard disk drive.

SPECIFICATIONS – MK2004GAL (HDD1422) HARD DISK DRIVE

General

Model	MK2004GAL (HDD1422)
Interface	ATA-2/3/4/5

Functionality

Formatted Capacity	20.0GB*
Rotational Speed	4200rpm
Avg. Rotational Latency	7.14/ms
Spin-up Time	3.5sec (typical)
Buffer	2Mbytes
Seek Time	
Average	15
Maximum	26
Internal Transfer Rate	125.5 ~ 253.1 Mbits/sec (max)
Host Transfer Rate	
Ultra DMA mode	100Mbytes/sec
PIO Mode	16.6Mbytes/sec
Interleave Factor	1:1

*Toshiba defines a megabyte (MB) as 1,000,000 bytes and a gigabyte (GB) as 1,000,000,000 bytes.

Internal Drive Characteristics

Number of Disks	1
Number of Data Heads	2
Track Density (TPI)	3,465 (88.0k)
Logical Cylinders	16,383
Logical Heads	16
Logical Sectors/track	63
Bytes per Sector	512
Logical Blocks (LBA)	39,063,024

Reliability

Preventative maintenance	None
Non-recoverable read errors	1 error per 10^{13} bits read

Electrical

Voltage	3.3V 5%
---------	---------

Power Consumption

Start	1.2W typ
Seek	1.4W typ
Read/Write	1.4W typ
Sleep	0.08W typ
Energy Consumption Efficiency	0.02W/GB avg
Shock	
Operating	2,450m/s ² (250G)(2msec)
Non-Operating	9,800m/s ² (1000G)(1msec)

Physical

Height	0.2" (5.0mm)
Width	2.13" (54.0mm)
Depth	3.09" (78.5mm)
Weight	1.8oz (51g) typ

Regulatory

The drive satisfies the following standards:

Underwriters Laboratories (UL)	1950
Canadian Standard Association (CSA)	C22.2 No. 950
TUV Rheinland	EN 60 950
BSMI	3902C799

DRIVE CONNECTORS – MK2004GAL (HDD1422) HARD DISK DRIVE



Figure 1. MK2004GAL HDD - INTERFACE CONNECTOR

Interface Connector

Drive Side Connector

MCD-D50 Series by DDK Connectors

Recommended Host Side Connector

MCD-D50 Series by DDK Connectors

Interface Signals

DRIVE INTERFACE SIGNALS			
PIN	SIGNAL	PIN	SIGNAL
1	RESET	2	GROUND
3	DD 7	4	DD 8
5	DD 6	6	DD 9
7	DD 5	8	DD 10
9	DD 4	10	DD 11
11	DD 3	12	DD 12
13	DD 2	14	DD 13
15	DD 1	16	DD 14
17	DD 0	18	DD 15
19	GROUND	20	OPEN
21	DMARQ	22	GROUND
23	DIOW/STOP	24	GROUND
25	DIOR/ -DMARDY HSTROBE	26	GROUND
27	IORDY/ -DMARDY/ DSTROBE	28	CSEL
29	DMACK	30	GROUND
31	INTRQ	32	IOCS16
33	DA1	34	PDIAG
35	DA0	36	DA 2
37	CS0	38	CS1
39	DASP	40	GROUND
41	3.3V (LOGIC)	42	3.3V (MOTOR)
43	GROUND	44	RESERVED
<i>Note: Symbol () in front of signal indicates negative logic.</i>			